

**What is claimed is:**

1. A synchronous rectifier with dead time adjusting function, connected to a secondary side of a transformer, a capacitor, an output power source and an electric switch, comprising:

5        a rectifying circuit connected to a secondary side terminal of a transformer and rectifying an alternating voltage of the secondary side terminal into a positive half-cycle voltage;

         a charging circuit connected to the rectifying circuit and producing a first charging voltage and a second charging voltage;

10       a regulated power circuit connected to the charging circuit and receiving the first charging voltage to produce a reference voltage;

         a trigger circuit connected to the rectifying circuit and the charging circuit for generating a pulse signal, wherein a dead time adjusting comparing signal is output by the pulse signal and the second charging voltage;

15       a comparing circuit connected to the regulated circuit, the charging circuit, and the trigger circuit, wherein the comparing circuit compares the dead time adjusting comparing signal with the reference voltage to produce a dead time adjusting signal; and

         a logic circuit connected to the comparing circuit and the rectifying circuit,  
20       wherein the logic circuit performs an AND logic operation with the dead time adjusting comparing signal and the positive half-cycle voltage to output a first driving signal for controlling on/off states of a first electric switch.

2. The synchronous rectifier with dead time adjusting function as in claim 1, wherein the charging circuit comprises:

a first charging unit connected to the rectifying circuit for outputting the first charging voltage; and

a second charging unit connected to the first charging unit for outputting the second charging voltage.

5        3. The synchronous rectifier with dead time adjusting function as in claim 1, further comprising a shaping circuit connected to the rectifying circuit and the logic circuit, wherein the shaping circuit transforms a positive half-cycle voltage into a shaping voltage and transmits the shaping voltage to the logic circuit.

10       4. The synchronous rectifier with dead time adjusting function as in claim 1, further comprising a driving circuit connected to the logic circuit and the first electric switch, wherein the driving circuit receives the first driving signal for generating a first control signal and the first control signal controls on/off states of the first electric switch.

15       5. The synchronous rectifier with dead time adjusting function as in claim 1, wherein the charging circuit is an RC charging circuit.

6. The synchronous rectifier with dead time adjusting function as in claim 1, wherein the rectifying circuit includes at least one diode.

7. The synchronous rectifier with dead time adjusting function as in claim  
20 1, wherein the regulated power circuit, comparing circuit, logic circuit, and a trigger circuit are packaged into a control integrated circuit and the control integrated circuit comprises a first power source pin, a ground pin, a second power source pin, a charging input pin, and a first output pin.

8. A synchronous rectifier with dead time adjusting function connected to a

secondary side of a transformer, an output power source and a first electric switch, comprising:

a rectifying circuit connected to a secondary side terminal of a transformer and outputting a positive half-cycle voltage;

5 a charging circuit connected to the rectifying circuit;

a regulated power circuit connected to the charging circuit and producing a reference voltage;

a trigger circuit connected to the rectifying circuit and the charging circuit for generating a pulse signal;

10 a comparing circuit connected to the regulated circuit, the charging circuit and the trigger circuit and producing a dead time adjusting signal; and

a logic circuit connected to the comparing circuit and the rectifying circuit and outputting a first driving signal for controlling on/off states of a first electric switch.

15 9. The synchronous rectifier with a dead time adjusting function as in claim 8, wherein the logic circuit performs an AND logic operation with the dead time adjusting comparing signal and the positive half-cycle voltage.

10. The synchronous rectifier with dead time adjusting function as in claim 8, wherein the regulated power circuit, comparing circuit, logic circuit, and a  
20 trigger circuit are packaged into a control integrated circuit, and the control integrated circuit comprises a first power source pin, a ground pin, a second power source pin, a charging input pin, and a first output pin.